Report Date: 16 May 2014

Summary Report for Individual Task
011-218-1104
Perform Normal Takeoff and Climb
Status: Approved

Distribution Restriction: Approved for public release; distribution is unlimited.

Destruction Notice: None

Foreign Disclosure: FD5 - This product/publication has been reviewed by the product developers in coordination with the Fort Rucker foreign disclosure authority. This product is releasable to students from all requesting foreign countries without restrictions.

Condition: In a C-12 airplane, day or night.

Standard: 1. Without error, complete before-takeoff, lineup, and after-takeoff checks.

2. Maintain a predetermined track (normally runway centerline between the main landing gear during the takeoff roll.

3. Obtain computed static takeoff power prior to reaching 65 KTS.

4. Rotate at V_R -0/+5 KIAS.

5. Perform climb after lift-off at 160 KIAS or per climb schedule.

Special Condition: None

Safety Risk: Medium

MOPP 4:

Task Statements

Cue: None

DANGER

None

WARNING

None

CAUTION

None

Remarks:
NIGHT CONSIDERATIONS:

1. The cockpit lights should be at a low intensity and a serviceable flashlight must be readily accessible. Use taxi/landing light(s) to check that the entire takeoff path is clear before starting the takeoff run. Reduced visual references during the takeoff and the takeoff climb may make it difficult to maintain the desired ground track. Knowing the surface wind direction and velocity will assist in establishing the crab angle required to maintain the desired ground track. Monitor heading and attitude instruments closely and be prepared to convert to instrument flight if the visual horizon is lost or if the P* experiences vertigo.

2. Terrain will not be visible unless back-lighted. If ground lights unexpectedly disappear, then it is highly likely that terrain has appeared between the aircraft and the ground lights. It is critical that crews maintain an altitude or course that guaranties terrain clearance when descending or departing the airport.

COLD WEATHER CONSIDERATIONS:

1. Prior to takeoff. Activate all anti-icing systems, allowing sufficient time for the equipment to become effective. If any ice,

snow, or frost is present on the flying surfaces, do not attempt to take off. Comply with the holdover times of any anti-icing and deicing applications; holdover time starts when the last application has begun. Accumulations of slush/snow on the runway detrimentally impacts the takeoff distance and braking action and will be considered during mission planning.

2. Takeoff. Procedures are the same as for a normal takeoff, except for a possible decrease in aircraft performance caused by the use of the anti-icing/de-icing equipment. Additional takeoff distance should be allowed if snow or slush is on the runway. Contaminated runway adjustments will be applied to performance planning. Before starting the takeoff roll, check all controls including trim for full travel and freedom of movement. Smoothly apply power to avoid asymmetrical thrust conditions. In conditions conducive to the formation of ice, a phenomenon often occurs that results in an icy buildup on the painted surface of the runway centerline. Under these conditions, during the take off roll, a slight off set of the nose gear to either side of the centerline is permissible. After takeoff, it is recommended that, when flight considerations permit, the landing gear should be left down without braking action long enough for rotational forces and forward speed to remove most of the moisture, snow, and slush. Extra cycling of the landing gear shortly after takeoff can help dislodge moisture on moving parts of the retraction system.

3. After takeoff. If the takeoff was made from a runway covered with snow or slush, refer to the aircraft operator's manual for after-takeoff procedures. Climb at a higher-than-normal airspeed (shallower pitch angle if possible and still make climb gradients) to prevent ice accumulation on unprotected surfaces. Allow ice to accumulate IAW the aircraft operator's manual before activating the surface de-icing equipment. Higher-than-normal stall speeds should be expected and, as ice accumulates, the stall warning system may become unreliable. Turns should be wide and shallow.

Notes: None

Performance Steps

1. Crew actions.

Note:
The crew must ensure that minimum takeoff power is obtainable prior to brake release on or prior to the first takeoff of the day for aircraft.

Note. The two engine climb airspeed from SL to 10,000 listed in the Time, Fuel, and Distance Climb chart of the operator's manual may be used if required for mission consideration.

a. The P*'s main focus will be outside the aircraft during the maneuver. While initiating power application, the P* will monitor engine instruments carefully and be prepared to announce an abort if the aircraft performance is not satisfactory.

b. The P will assist the P* by verifying the P*'s flight instruments settings, monitoring engine instruments, adjusting power, making the crew callouts, and reading the CL. The P will perform those items directed by the P*.

2. Procedures. The P*, assisted by the P, will perform the following actions:

a. Normal takeoff.

(1) Lineup. Complete the before-takeoff check and departure briefing. Complete the lineup check using the CL. Aircrews should start the lineup check when cleared onto the active runway. Align the aircraft with the runway heading and cross check instruments to ensure aircraft is on the correct runway.

Note:
The aircraft may produce power in excess of the minimum T/O power charted TQ value. The P should monitor and adjust power as required to maintain MAX available takeoff power without exceeding engine limits.

(2) Power. P* smoothly advances the power levers to within 5 percent of computed power. Transfer the power to the P for the final setting with a "SET POWER" callout. The P will set takeoff power (at a minimum the minimum takeoff power or the MAX allowable power) and state, "POWER SET." When runway length permits, the normal takeoff may be modified by starting the takeoff roll before attaining takeoff power. In this case, initially advance power until both propellers are on the primary governors and TQ is equal; then continue to advance power transferring the power control to the P with the same callouts.

Note:
The P* does not relinquish control of the power levers to the P until the takeoff decision speed (V1) callout. The P will assist the P* by setting and maintaining the takeoff power as briefed. If there is a need to abort the take-off during the takeoff roll, either pilot may call the abort but the P* will retard the power levers.

(3) Takeoff. During takeoff, maintain directional control with nose wheel steering and rudder so that the predetermined track is between the main landing gear. Keep the wings level with ailerons. Although the P is managing power to 400 feet, the P* should retain a light hold on the power levers until V1 is attained and be ready to initiate abort procedures, if required. The P should ensure that the autofeather advisory lights are illuminated. Monitor instruments for proper indications to ensure that the engine limitations are not exceeded. Passing 65 KIAS, the P will call out, "NORMAL," if all indications are proper. As the elevator starts becoming effective (about 80 KIAS), the P* should start increasing back pressure on the yoke at rate that will allow the nose tire to be just departing the ground at VR. The P will announce "V1" upon attaining V1. The P* will remove his hand from the power levers and place it on the control yoke. The P will call, "ROTATE," at VR. The P* will increase aft pressure on the elevator and smoothly rotate to the pitch attitude that will result in obtaining a 10-degree pitch attitude after liftoff. The P will continue to monitor instruments for proper indications and physically guard the power levers.

Note:
If a power change is needed, the P* should direct the P to make the change. This principle may be essential in the event of an emergency.

(a) When two positive rate-of-climb indications are noted, the P will announce "POSITIVE RATE", The P* will call "GEAR UP." The left seat crewmember will move the landing gear handle to the UP position, turn off the landing/taxi lights, and announce "GEAR UP." Adjust pitch to a 10 to 12-degree attitude and allow the aircraft to accelerate. When passing VYSE the P* will call for "FLAPS UP OR CHECK FLAPS UP". The P will retract the flaps and announce "FLAPS UP".

(b) P* will allow the aircraft to continue to accelerate to 160 KIAS, adjusting forward trim as necessary to relieve the control pressures. When 160 KIAS is obtained, adjust pitch to maintain 160 KIAS until 400 feet AGL. Climb schedule speeds may be used as the mission dictates and takeoff weight allows not to exceed a 15-degree pitch up attitude.

(4) Climb. After passing 400 feet AGL, the P* will task the P to “SET CLIMB POWER.” Climb power is set by adjusting the TQ and propeller RPM IAW the operator’s manual. After setting climb power, The P will announce “CLIMB POWER SET, YOUR POWER” and transfer the power back to the P* with a “MY POWER” callout from the P*. Complete the after-takeoff check. P should monitor the engine instruments and advise the P* of any abnormal condition.

b. Crosswind takeoff. During crosswind conditions, position the aileron control into the wind at the start of the takeoff roll. In strong crosswinds, consider delaying the point where the P* would normally apply aft pressure for rotation to later in the takeoff roll. This allows the aircraft WT to stay on the wheels longer before transferring it to the wings, thereby minimizing the chance the aircraft will skip and skin a tire before liftoff. As the nose wheel comes off the ground, use the rudder as necessary to prevent turning (crabbing) into the wind. To prevent damage to the landing gear if the airplane were to settle back onto the runway, remain in a slip until well clear of the ground. Then crab into the wind to continue a straight flight path.

Remarks:
DESERT AND HOT WEATHER CONSIDERATIONS: Use normal takeoff procedures. Avoid taking off in the wake of another aircraft if the runway surface is sandy or dusty.

MOUNTAIN CONSIDERATIONS:

1. Takeoff distance, rate of climb. Use normal takeoff procedures but remember, because of the higher elevation, your takeoff distance will increase, rate of acceleration and your rate of climb will decrease.

2. Mountain wave. Avoid flight at low altitudes over mountainous terrain, particularly near the lee slopes. Mountain waves occur when air is being blown over a mountain range or even the ridge of a sharp bluff area. As the air hits the upward side of the range, it starts to climb, thus creating what is generally a smooth updraft that turns into a turbulent downdraft as the air passes the crest of a ridge. From this point, for many miles downwind, there will be a series of downdrafts and updrafts. All it takes to form a mountain wave is wind blowing across the range at 15 KTS or better at an intersection angle of not less than 30 degrees. If
the wind velocity near the level of the ridge is in excess of 25 KTS and about perpendicular to the ridge, mountain wave conditions are likely over and near the lee slopes. If the wind velocity at the level of the ridge exceeds 50 KTS, a strong mountain wave is probable with extreme up and down drafts and severe turbulence. The worst turbulence will be encountered in, and below, the rotor zone, which is usually 8 to 10 miles downwind from the ridge. This zone is sometimes characterized by the presence of altocumulus lenticular clouds or roll clouds if sufficient moisture is present. Mountain wave turbulence can occur in dry air and with no visible clouds. A mountain wave downdraft may exceed the climb and power capability of your airplane.

3. Effects of density altitude. Aircraft operations at altitudes above sea level, and at higher than standard TEMPs, are commonplace in mountainous areas. Such operations quite often result in a drastic reduction of aircraft performance capabilities because of the changing air density. Density altitude is a measure of air density. It is not to be confused with PA, true altitude or absolute altitude. It is not to be used as a height reference, but as determining criteria in the performance capability of an aircraft. Air density decreases with altitude. As air density decreases, density altitude increases. The further effects of high TEMP and high humidity are cumulative, resulting in an increasing high density altitude condition. High-density altitude reduces all aircraft performance parameters.

c. Obstacle clearance climbs. If an obstacle at the end of the runway must be cleared, the take-off will be made by applying maximum available takeoff power prior to brake release and using flaps at the APPROACH or 40 percent position. Establish the initial climb at the VX speed obtained from the tabular data box of the TAKE-OFF DISTANCE FLAPS 40 % chart. Do not exceed a 20-degree pitch attitude and accept the additional airspeed. Once the obstacle is cleared accelerate, retract the flaps at VYSE, and proceed with the normal take-off procedures.

(Asterisks indicates a leader performance step.)

Evaluation Guidance: Evaluation will be conducted in the aircraft or in an approved FS.

Evaluation Preparation: Training will be conducted in the aircraft or in an approved FS.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Completed before-takeoff, lineup, and after-takeoff checks.			
2. Maintained a predetermined track (normally runway centerline between the main landing gear during the takeoff roll.			
3. Obtained computed static takeoff power prior to reaching 65 KTS.			
4. Rotated at VR -0/+5 KIAS.			
5. Performed climb after lift-off at 160 KIAS or per climb schedule.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TM 1-1510-218-10	OPERATORS MANUAL FOR ARMY C-12C, C-12D, C-12T1, AND C-12C2 AIRCRAFT	No	No
	TM 1-1510-218-CL	OPERATORS AND CREWMEMBERS CHECKLIST FOR ARMY C-12C AIRCRAFT (NSN 1510- 01-070-3661);ARMY C-12D AIRCRAFT (1510-01-087-9129);ARMY C-12T AIRCRAFT (1510-01-470-0220)	No	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT.

Safety: In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination.

Prerequisite Individual Tasks : None

Supporting Individual Tasks : None

Supported Individual Tasks : None

Supported Collective Tasks : None